Abstract:

This paper is based on 6 months of ethnographic, multi-sited research in Malaysia, and investigates the relatively recent phenomenon of edible birds' nest farming in urban areas ('swiftlet farming'). Swiftlet farms are typically converted shophouses or other buildings which have been modified for the purpose of harvesting the nests of the Edible-nest Swiftlet (A*erodramus Fuciphagus)*. I use the controversy over urban swiftlet farming in the Malaysian city of George Town, Penang, to examine discourses used by key stakeholders to shape debates over the place of non-human animals in cities. By considering everyday experiences of urban swiftlet farming, I explore how this burgeoning industry is perceived amongst residents, and how it is deemed to be (in)appropriate within the political, economic and cultural landscape of George Town. Yet, I also consider how farmers have sought to contest these discourses on ideological and normative grounds. In so doing, I place the cultural animal geographies literature in conversation with emergent literature on landscape and urban political ecology. Such a framing allows for a critical evaluation of the controversies surrounding this case, and their implications for human-animal cohabitation in cities. The paper reflects on the implications of this case for how we regulate human-animal relations and live in contemporary cities, and the crucial role of animals in altering urban form, aesthetics and everyday life, particularly in non-Western contexts.

1. Introduction:

Although cities have long been hybrid spaces of human, animal and insect inhabitation, attempts are frequently made to expel the 'other' and particularly 'nonhuman' from 'civilised' urban spaces (Bingham and Hinchliffe, 2008; Gaynor, 1999; Philo, 1995). Efforts to domesticate

edible-nest swiftlets (*aerodramus fuciphagus)* in Malaysian cities constitutes a recent example of this tendency, as the increasing presence of swiftlets has intruded upon ideas about the 'proper' place of these birds in urban areas (see also Philo, 1995). 'Swiftlet farming' is a colloquial term that refers to the cultivation system of edible birds' nests (EBNs) by preparing specially designed buildings for swiftlets to roost and nest. Edible-nest swiftlets are a small species of bird, found only in Southeast Asia, which make edible nests entirely of their saliva. These nests (which are also referred to colloquially as 'caviar of the east' or 'white gold'; see figure 1), have long been a highly sought-after delicacy in China and their trade and consumption within the Asian region dates back as far as the Tang Dynasty (618-907 CE) (Lau and Melville, 1994; Blussé, 1991). Traditionally, nests were collected from caves by (largely) indigenous peoples across Southeast Asia, particularly in the limestone caves of Borneo, which used to have the world's largest concentration of swiftlets before over-harvesting reduced the population there (Lim and Cranbrook, 2002). However, a more recent response to the increase in price and demand for birds' nest since the 1990s has been the proliferation of 'swiftlet farming', in Indonesia, Malaysia, Thailand and Vietnam.

<Figure 1: swiftlets tending to their nests inside the Puri Hotel, Malacca, Malaysia. Photo by author.>

As of 2009, the birds' nest industry in Malaysia was estimated to have generated an annual output of approximately 275 tons[1] worth approximately 1.5 billion (US$420 million) annually (*The Sun*, 26 November 2009). This established Malaysia as the world's second largest exporter of birds' nests, after Indonesia, which supplies 75% of the 3,750 ton global demand for

[1] There are approximately 110-120 nests per kilogram.

birds' nest every year (Lim, 2008). Yet, the swiftlet farming industry has significantly transformed the physical form of cities and even the nesting behaviours of swiftlets, which poses significant implications for the use of urban space, and the sustainability of urban swiftlet farming as a whole. As Lim and Cranbrook (2002, p. 149) put it, 'scientists and laymen alike are deeply divided into two schools of thought. One promotes the advantages of swiftlet farming while the other strongly opposes it'. Consequently, the Malaysian government has been faced with the contradictory task of trying to mitigate the industry's impacts on affected city dwellers, whilst simultaneously promoting the industry and protecting the interests of swiftlet farmers.

In this paper, I use the controversy over urban swiftlet farming in the Malaysian city of George Town, Penang, to examine the discourses used by key stakeholders to shape debates over the place of non-human animals in cities. My intention here is not to stake out a definitive normative stance on the urban swiftlet farming issue in Malaysia, but rather to explore how the industry has been perceived and contested on an everyday basis. This involves tracing the controversies over farming of swiftlets in George Town by studying the particular discourses that circulate in a given community, from rhetorics of health and disease (see anonymous, in press a) to moral discourses, which are either hostile or supportive of animal presence in the city. In particular, I consider the role of different stakeholders, including the Penang State Government in negotiating and implementing policies to control swiftlet farms in urban areas, and the various challenges that they faced. This aspect of the paper thus aids in addressing a gap in the animal geographies literature which has not yet fully considered the range of stakeholders at play in regulating animal-human conflicts in cities (see Gullo et al, 1998; Hovorka, 2008; Neo and Ngiam, 2014; Yeo and Neo, 2011).

In contrast to other animals like dogs, cats, chickens and other livestock animals which have been domesticated for centuries, the domestication of swiftlets is currently ongoing and open to study. Swiftlet farming is therefore an important case to analyse because of the semi-domesticated nature of the birds, and their liminal status in cities, disrupting the categories of 'wild' and 'domesticated'. More broadly, swiftlet farming can be seen as a form of urban livestock keeping, which, 'in recent years, has received increasing support as a strategy for food security and urban sustainability' (Colasanti *et al*., 2012: 348). Urban livestock animals have thus been making a resurgence in urban spaces, after years of being marginalised and excluded from urban, residential spaces (see Blecha and Leitner, 2014; Hovorka, 2008). Yet, such practices are generally on a small scale, and as Colasanti *et al*. note, 'there is little understanding of how more extensive urban agriculture activities might be perceived among residents or might integrate with the cityscape' (ibid). Moreover, Tornaghi's (2014) review of the urban agriculture literature in geography contained little discussion of work critical of the proliferation of recent forms of urban farming, particularly in non-Western contexts. This paper thus follows up on the call of Colasanti *et al*. by examining the contentious place of swiftlets within Penang's socio-economic, political and cultural landscape. This also constitutes a significant gap in the literature on swiftlet farming, which has not considered the contentious socio-ecological aspects associated with the industry's rapid development.

George Town was selected as it has experienced the most controversy over the swiftlet farming industry of all Malaysian cities, in large part because of the city's UNESCO World Heritage Status which was allegedly endangered by the industry. Allegations regarding the unsuitability of swiftlet farms for a World Heritage City such as George Town cited both material

and discursive reasons. For instance, an impact assessment report on swiftlet farming in George Town stated that "the production and harvesting of edible birds nest does not have any historical association with urban environments" (GTWHI, 2012: 76-77). Moreover, as one heritage expert in Kuala Lumpur argued, "converting a heritage building into a 'bird house' is not only inappropriate but has many other deleterious effects…in a closed environment, moisture accumulates and accelerates the decay of plaster, brick walls and timber ceilings...the rotting wood invites termite infestation. Bird droppings also hasten the destruction of building materials and the interior ornamentation and beautiful embellishments of heritage buildings" (Cardosa quoted in Chok & Bhatt, 2006: 6). As I have argued elsewhere, the fear of losing or endangering the city's UNESCO status has been the ultimate driver in sparking action on swiftlet farming in George Town, due to the economic value (tourist dollars) and prestige associated with the listing (anonymous, in press b).

<FIGURE 2 ABOUT HERE, CAPTION: Location of George Town and other research sites within Malaysia, map by Nick Scarle.>

In analysing this case, I draw on the conceptual toolkit of landscape political ecology (LPE), which integrates the concerns of landscape approaches in cultural geography with those of urban political ecology. This usefulness of the landscape perspective is that it renders visible the social struggles over how the landscape is (or should be) made, thereby revealing the contrasting landscape interests and cultural politics at stake. On the other hand, the (urban) political ecology component of the approach can capture the discursive strategies used to justify and 'naturalise' the enrolment of animals into urban activities (see Gandy, 2002; Kaika 2005; 2006; Loftus, 2006; Swyngedouw, 2004). In addition, I draw on previous work on moral animal

geographies, which have interrogated the moral-legal standing of animals, their moral relationship with humans, and their place in human societies (Hovorka, 2008; Neo and Ngiam, 2014: 238; Proctor, 1998).

The next section will outline the theoretical framing of LPE, which focuses on the role of discourse in (re)shaping urban environments (see Neumann, 2011; Walker and Fortmann, 2003). I argue that this line of inquiry is apt to address Wolch's (2002: 735) provocation for more sophisticated urban political ecology approaches, which can study the "powerful discourses" and "political economic forces" influencing human-animal relations in the city. The third section situates the Malaysian swiftlet farming industry as a form of urban livestock rearing, and discusses its emergence in relation to other studies of human-animal relationships in the city. The fourth section discussing the empirical case is divided into two subsections, considering (a) debates over the 'naturalness' of swiftlets in Malaysian cities, and (b) the challenges faced in previous attempts at regulating the industry in George Town, and how it can be reorganised in a more democratic manner. The final section reflects on the implications of this case for how we regulate and live in contemporary cities, and the crucial role of animals in altering urban form, aesthetics and everyday life.

2. Landscape political ecologies of swiftlet farming

It is becoming increasingly clear that understanding socio-natural relationships in cities requires foregrounding the ways in which animals and humans are involved in co-producing the landscape and urban environment (see Brown 2015; Matless et al., 2015; Pelota et al., 2013). As such, Anna Tsing suggests that one way to write a more nuanced account of interactions between

human and nonhuman species is to take the landscape as an object of analysis (Tsing, 2005). The term landscape refers not only to a physical place (land), but also to a particular way of seeing (scape). Landscape thus has a dual meaning, in that it refers to a particular kind of place, but also the meanings attached to that place (see Proctor, 1998: 193-94; Gesler, 1992: 736; Mitchell, 2000). However, rather than merely looking at the aesthetic or material arrangements of the physical landscape, Tsing also advocates investigating the material interventions and representational practices involved in making and maintaining the landscape (see also Boland, 2008; Cosgrove, 1998; Lippard, 1997; Schein, 2009). This has been done in the present paper by considering the ways in which various stakeholders have sought to alter public opinion on the siting of swiftlet farms in the city.

Landscape has served as a key analytical device for previous research in the animal geographies literature, which has sought to examine "how conceptions and experiences of landscapes and animals combine to shape the ability to co-exist across species boundaries" (Brown, 2015: 39). For example, Peltola *et al* (2013) use animals as a lens to consider how humans and animals interact in co-producing the landscape, and how the landscape shapes human-animal relationships and livelihoods (see also, Brown 2015; Hovorka, 2008; Proctor, 1998). Landscape is thus widely understood amongst animal geographers as central to understanding human-animal relationships in various communities (Wolch et al., 2003; Neo and Ngiam, 2014, p. 238). The approach in this paper thus builds on emerging literature which seeks to document how animals and humans have been involved in mutually co-producing urban space and urban policy, and with what implications (see Dempsey, 2010; Hovorka, 2008, Peltola et al., 2014).

Animal geographers have also been particularly interested in the ethical and moral landscapes related to animals in the city (Neo and Ngiam 2014, p.238). To this end, geographers have considered the role of animals in shaping the moral landscapes of particular places and regions, while also examining how animals can be politicised to achieve certain outcomes (see e.g. Brown, 2015; Hinchliffe et al., 2005; Neo, 2011; Notzke, 2013; Proctor, 1998).[2] For instance, Brown's study on the spatial control of dogs attends to how animals fit into "discursive and non-discursive spaces of the world" (2015: 41). She argues that discourses used to delimit the mobility of dogs are very much based on humans' expectations surrounding animals: how they should behave, where they should be, and how they should be used. Likewise, Wolch concludes that "the ability of animals to co-exist in the city is strongly shaped by powerful discourses around ecological science, environmentalism ... and urban property rights" (2002, p. 735). Moreover, these discourses are invoked differently by competing social groups, to define and challenge the 'urban(e) limits' of a given society.[3] By exploring such discourses, it is thus possible to draw out the spatial and political implications regarding how animals can be figured into politically and morally infused conflicts over the use of urban space.

Political ecologists have also increasingly used animals as a way to understand interactions between society and nature (e.g. Instone and Sweeney, 2014; Notzke, 2013; Robbins, 2004, p. 212). For instance, Griffiths *et al* (2000) have argued that the desire to establish a boundary between urban civilisation and (animal) nature emerged out of a fear of merging culture and

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[2] The concept of moral landscapes concerns the ways in which certain moral boundaries are naturalised in and through landscapes, in the interplay of their material and representational forms (Setten and Brown, 2009: 191).

[3] 'Urban(e) limits' is a term used by Bunnell (2002, p. 1687) to refer to the moral ordering of particular places, and 'appropriate' relations for individuals with their environment.

nature. Instone and Sweeney (2014, p. 355), for example, in their study of dog waste in urban Australia, consider how the human-animal relations inherent in the management of dogs and dog waste shape the material flows that constitute urban political ecologies. Such a focus is in line with dominant approaches in urban political ecology which aim to consider the metabolic circulation of (non)humans, commodities, information and capital which are co-constitutive of the urban environment (see Kaika, 2005; Loftus, 2006; Swyngedouw, 2004; Thorburn, 2014). In addition, urban political ecologists often aim to integrate the material and discursive elements of socio-environmental issues with their political-economic dimensions (see Gandy, 2013; Intone and Sweeney, 2014; Kaika, 2006). This illustrates the compatibility of the landscape and political ecology components of LPE, and their applicability to the controversies over urban swiftlet farming in Malaysia.

Roger Keil (2003, p. 729) has observed that urban political ecology is ultimately a question of democracy, governance, and politics of everyday life in cities. Yet, some scholars have argued that previous work in political ecology has tended to treated animals as objects, rather than subjects, in resource or other environmental conflicts (see Hobson, 2007). For this reason, Robbins (2004, p. 213) has argued for the agency of non-humans to be recognised as constitutive of urban ecologies and politics. Indeed, it has been widely noted that non-humans are already involved in the democratic governance of cities through the competing stakeholders and discourses that mobilise them in support of particular agendas (see Hobson, 2007; Hovorka, 2008).[4]

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[4] Dempsey (2010), for example, argues that grizzly bears act as 'players' in the forest economy of British Columbia, given that they transform the face of the regional political economy and local state of affairs, simply by being present in the place.

In this way, UPE approaches are similar to work on hybrid geographies, which see wildlife as constitutive of urban space, rather than separate from it (see Hichliffe and Whatmore, 2006; Hinchliffe et al., 2005; Thomson, 2007). Gandy (2013), for example has recently suggested that cities are increasingly spaces of *ecological cosmopolitanism,* where an array of non-human life spontaneously inhabit the marginal spaces in and around towns and cities where humans live and work. Yeo and Neo (2010) similarly refer to such spaces as 'borderlands', or hybrid spaces of co-habitation between humans and animals. The crucial issue here is not just of blurring the boundary between 'nature' and 'society', but rather of taking responsibility for how social interventions in nature take place, with what consequences, and for whose benefit (see also Desfor and Keil, 2004; Loftus, 2006; Swyngedouw, 2004).

3. Swiftlets, productive animals and the city

New cultural animal geographers, particularly proponents of transspecies urban theory, have also sought to position animals as legitimate societal actors in their own right, and highlight their role in constituting everyday urban spaces (see Hovorka, 2008; Wolch et al., 1995). As Alice Hovorka (2008, p. 98) has observed, "transpecies urban theory attempts to move beyond utilitarian, symbolic, and ultimately anthropocentric conceptualisations of human-animal relations in the urban realm". Yet, as she pointed out, not only are livestock not supposed to be in cities, they are not readily visible given their placement in out of the way spaces (Hovorka, 2008, p. 95). The partitioning of productive animals away from urban residential areas dates back to the late 19th century, due to negative externalities such as "odours, flies and unseemly sites associated with animal husbandry" (Fielding, in Philo, 1995, p. 666; see also Blecha and Leitner,

2014). As Kaika (2006) has demonstrated, these ‘sanitation’ projects were bound up with the quest to tame and control nature, which were central to the production, metabolism and expansion of modern cities (see also, Jerolmack, 2008). Yet, like other productive and ‘wild’ animals, such as chickens (see Hovorka, 2008; Blecha and Leitner, 2014; Thomson, 2007), swiftlets are starting to disrupt these spatial configurations.

Swiftlets are highly visible in urban spaces because they do not stay inside the confines of swiftlet farms, thus making them more prominent than other urban animals. Moreover, they are often located in the center of cities, which is done for various ecological and practical reasons. First, many swiftlets and swiftlet farmers prefer inner-city heritage buildings because they are not only much cooler but also devoid of potential predators which would be more prevalent in rural areas (i.e. pythons, owls, lizards). More importantly, many have noted that converting existing inner city buildings is much cheaper than acquiring a rural plot of land and constructing a new building from scratch. Finally, many swiftlet farmers that I interviewed believe that swiftlets are more attracted to older buildings, because they do not have the same scents associated with newly constructed buildings. These characteristics underscore Hovorka’s (2008, p.101) finding that livestock are “particularly amenable to the physical spaces and ecological niches presented by the urban habitat, thus affirming their ‘belonging’ in the built environment”.

In this way, swiftlets have transgressed human urban boundaries, and made a place for themselves within the urban landscape (see also, Philo and Wilbert, 2000). This is in contrast to other urban livestock animals, which Hovorka (2008: 100) has noted, have been: “treated largely as objects and denied a role in shaping urban form, function and dynamics”. Yet, like other forms

of livestock rearing, swiftlet farms have also been criticised for creating health and environmental hazards, like disease, odours, noise, untreated waste, and blocking accessibility to common urban spaces (see, e.g. Cronon, 1991; Hovorka, 2008: 102; Philo, 1995: 666). Nonetheless, despite these claims, swiftlet farmers have attempted to counter these negative perceptions, and argue that swiftlets actually are clean and hygienic animals.[5] As one operator argued, for example, "swiftlets like clean premises" and, accordingly, "the [swiftlet] houses are cleaned weekly" (Tan, 2010: M4). Similarly, another noted that they "fly at a different level from that of other species" and do not mix or interact with other species of birds, thus reducing the risk of contracting diseases (Chow *et al*., 2012: 9). As such swiftlets and swiftlet farmers have created an "intrusive reality" of productive animals mingling with other city dwellers (Philo, 1995, p. 656; see also, Jerolmack, 2008).

Unlike most cases of domestication, the domestication of swiftlets has been the result of a convergence of avian and human behaviours. In fact, Lord Cranbrook, an established expert on swiftlet biology, has stressed that this initial phase of house-colonisation happened spontaneously, and did not involve any human activity in attracting the birds, nor were there any movements to remove them. Cranbrook has argued that the contemporary urban farming of swiftlets is actually only the most recent sequence in the ongoing history of the 'domestication' of these birds (Cranbrook, correspondence, 18 January 2010). As he pointed out, the first house colonies in Malaysia became known in Johor (the southernmost state of Peninsular Malaysia) in 1947, but the original colonisation of the buildings must have happened much earlier, given the well-established nature of the colonies at that point. Furthermore, he noted that the same pattern

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[5] This is a debate that will be explored in more detail in the following section.

of domestication already existed in the 1930s and even earlier in Java, before spreading to Taiping and Kuala Lumpur in the early 1950s (ibid). Thus, swiftlets were already a 'natural' part of Southeast Asian cities, significantly pre-dating the history of the swiftlet farming industry.[6]

However, following the swiftlet farming 'boom' at the end of the 20th century - a result of the surging demand in China and overseas Chinese communities - the human provisioning of increasing numbers of buildings for swiftlets to nest in, and efforts to attract the birds into them, has encouraged this behaviour. This 'boom' took place in the wake of rapid urbanisation in Malaysia (see McGee, 2002), but was soon followed by the Asian financial crisis of 1997-1998, which left many of the buildings constructed during the previous boom abandoned. The effects of this crisis were amplified by the repeal of the Rent Control Act in Malaysia in 1999, which removed the restriction on inner-city landowners arbitrarily increasing rents (see Mohit and Sulaiman, 2006). Moreover, the industry was (falsely) invoked as being easy money, requiring very little time investment or specific knowledge, allowing potential investors to get rich almost overnight (e.g. Lim, 2006). The combination of these factors led to entire cities, like Sitiawan and Taiping (Perak state), being dominated by swiftlet farms.

In the following section, I turn to a more empirical discussion of the controversies over swiftlet farms in George Town, and how particular stakeholders have sought to position them as in/compatible with the urban environment. As I will demonstrate, many of these claims have been made to justify competing visions of how George Town's urban form and function should be configured. Like other studies of government responses to managing human-nonhuman conflicts in developing cities (e.g. Hovorka, 2008; Mulligan et al, 2012), the mitigation of risks

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[6] This point is discussed further in the following section (4a).

posed by urban swiftlet farms had to be balanced with other (political-economic) concerns. Moreover, the Government faced considerable challenges in removing swiftlets from George Town, largely because of the agency of the birds, which are difficult to relocate once they have established a 'home'.

4. Landscapes of 'swiftlet farming' in George Town

This paper draws on a larger research project on swiftlet farming in Malaysian cities, which consisted of three primary methodological components. The first component was documentary analysis, which was conducted both before and after the fieldwork phases. A range of materials were used, including online material such as blogs, news articles (and reader comments), as well as printed material, such as newspaper articles, government reports, and correspondence between key stakeholders. Over 100 newspaper articles were consulted, primarily from English dailies circulating in Malaysia, including the *New Straits Times, The Star* and *The Sun*. In the second, 30 semi-structured interviews were conducted with a range of actors in six different sites along the West coast of Malaysia and Singapore. These included individual and focus group interviews, and mobile, or 'go-along' interviews, which involved following participants through key swiftlet farming areas. (see Kusenbach, 2003). Research participants included key stakeholders such as government officials, swiftlet farmers, consultants, academics and civil society actors who all had experience and/or knowledge of the swiftlet farming industry. The third component consisted of an institutional ethnography where I worked closely with the Penang Heritage Trust (PHT), a key actor in the controversies over swiftlet farming in George Town, Penang - one of the cities in which swiftlet farming has been most heavily

contested (see Figure 3). This final component allowed me to gain more depth in the research and was more participatory and action oriented in nature. The open-ended and qualitative nature of methods used in conducting this research was emphasised in order to capture as closely as possible the concerns, perceptions, struggles and understandings of key participants.

The swiftlet farming industry in George Town grew most rapidly between 2003-2005, and in June 2005, the Malaysian Swiftlet Farmers Association estimated that over 10% of houses in George Town (400 in absolute figures) had been converted into swiftlet farms (Chua, 2010: 11). Following conferral of the UNESCO status in 2008, and pressure by various stakeholders, swiftlet farms were declared illegal within George Town's UNESCO World Heritage Site (the inner city area) in 2010, when the State Government announced to remove all swiftlet farms from the area by the end of 2013. However, while some enforcement action took place, many operators simply continued to go about their business illegally. Swiftlet farmers were also quite successful in lobbying for the legitimacy of the businesses, and even in influencing official legislation on swiftlet farms. The government thus needed to balance the demands of swiftlet farmers, and the economic benefits of the industry, with the complaints of residents and the protection of the UNESCO status. As a result, by 2011, a survey conducted by the PHT estimated the total number of swiftlet farms in central George Town was estimated at 173. Even after the State deadline for removal of swiftlet farms in March 2014, a personal survey conducted estimated there to be 43 remaining active swiftlet farms.[7] Given that an average swiftlet farm could accommodate up to 1000 birds, the population of swiftlets in the city has been quite large, giving them a strong presence in the urban area.

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[7] This is despite public announcements by the State Government that George Town was "swiftlet farm free" (Ngui, 2014).

<FIGURE 3 ABOUT HERE. CAPTION: An active swiftlet farm on Lebuh Campbell in central George Town, Penang (author's photo).>

Swiftlets in Malaysian cities seem to occupy an ambiguous space between domestic and wild, which has caused much of the debate over their presence in urban areas.[8] Since edible-nest swiftlets are only semi-domesticated, their presence in cities has also been treated with considerable ambivalence, given that they straddle the porous boundary between domesticated and wild (see also Griffiths et al., 2000). The proper term for what is popularly known as 'swiftlet farming' has thus been debated between various stakeholders who argue that it does not accurately describe the industry. Rather, many practitioners have argued that the industry would more accurately be considered as 'ranching', given that the birds are not fully domesticated, and are thus free to come and go as they please. Swiftlet aviculture can thus be seen not only to embody certain attributes of beekeeping (i.e. special structures for colonisation by essentially wild populations of bees). The implications of this categorisation are important because if swiftlet farming is considered farming, then it would not be allowed in the city, according to city zoning laws. But if it is considered ranching, on the other hand, then it constitutes a different issue because operators are not keeping the birds confined on the premise as with other forms of livestock rearing.

These are questions that will be explored in the following sub-section (4.1). As I will demonstrate, the investigation of the unique form of domestication involved in the rapidly evolving swiftlet farming industry can provide new insights into the long and constantly

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[8] This echoes recent work on other 'in-between' animals such as feral cats, which has theorised them as a marginalised group existing on the peripheries of urban societies, and crossing socially constructed boundaries between domestic and wild (Griffiths et al., 2000; Instone and Sweeney, 2014; Notzke, 2013; Philo and Wilbert, 2000; Van Patter, 2015; Wolch et al., 2003).

changing relationship between humans and other animals. Since swiftlets are free-flying and forage food on their own, structural borders in place around swiftlet farms (such as fences, walls and gates) are highly porous, which has lead to the controversy at hand. As Yeo and Neo (2011) have pointed out, choosing to live in such borderlands requires humans to adjust their living practices, or adapt to the presence of animals in order to prevent conflicts. Yet, in this case, many residents critical of swiftlet farms moved into their places of residence prior to the rise of swiftlet farms, thus arguing that they should not have to 'adapt' or modify their livelihoods. This will set the context for the following sub-section (4.2), which will consider the challenges of regulating swiftlet farms, and how the industry might be reconfigured in a way that is more socially and ecologically just for all (non)human stakeholders involved.

4.1. On the 'nature' of swiftlets in cities.

Table 1 shows the various terms and phrases used by residents to describe swiftlets, swiftlet farms, and their associated qualities. While most of the terms are unambiguous in their meanings and intent (in terms of whether they apply to swiftlets or swiftlet farms), a few of the terms can be seen as one or the other, or both (i.e. noisy and an eyesore). In such cases, I have interpreted the context and tone of the article or interview to determine the way in which the description was meant. As can be seen, a majority of comments related to swiftlet farms and the broader industry, rather than swiftlets themselves, and most were negative, rather than positive or neutral.

Table 1: Terms and phrases used by stakeholders to describe swiftlets and swiftlet farms.

Swiftlet farms/industry	Swiftlets
Negative - attract insects and infestations - emit foul smells - a health hazard - a threat to heritage buildings - affect living heritage - noisy and an eyesore - caused loss of sleep - worsened blood pressure - great social costs - left neighbours restless and frustrated - 'make it a challenge for people to live' - cruel **Positive** - a godsend (financially) - providing a lucrative trade to the country	**Negative** -A living hell -'leave their dung all over the place' **Positive/neutral** -non-threatening -do not cause bird flu -Highly intelligent animals -Part of the 'natural' and 'living' heritage of Penang

These comments suggest some answers to the question of *why,* and in what ways, swiftlets and swiftlet farm(er)s are deemed to be incompatible with urban life, and the associated implications for them. Swiftlets constitute an interesting case because they seem to be tolerable in urban areas (often unnoticed), yet not fully accepted, which contrasts to other livestock animals such as chickens or pigs which, as some respondents noted, would almost certainly invoke stronger reactions from urban residents. Therefore, some breeders have argued that swiftlet farming is actually a 'natural' process, due to the agency of the birds in 'choosing' to construct their nests in these buildings (e.g. Merican, 2007; Kaur, 2010).

In fact, some informants agreed that a majority of people in cities simply do not notice the birds (Cardosa, interview, 8 October 2013; Ding D.H., interview, 2 October 2013). As Elizabeth Cardosa of Badan Warisan Malaysia (Malaysian Heritage Trust, hereafter, BWM)

explained, swiftlets have been in towns for a long time, so they have become a 'natural' part of the urban environment, and "they are fairly discreet animals, you will not notice them, unlike other animals which have a more obvious or threatening presence in cities, like pigeons or crows, for instance. But swifts are quite small, so they don't necessarily have a large impact on their own" (interview, 8 October, 2013).

Such discussion about the 'naturalness' of urban swiftlet farming echo the representation of the industry as part of George Town's 'natural heritage', which I have discussed elsewhere (see anonymous, in press b). For instance, a report by the Malaysian Association of Swiftlet House Owners attempted to embed the industry in Malaysia's cultural history by relating swiftlet farming to 'village' (*kampung*) folk who have traditionally kept chickens in their back yard for personal consumption (Lim, 2008, p. 12). As George Town resident Rebecca Duckett-Wilkinson,[9] has observed, this strategy also "tried to present an idyllic picture" of the industry, in their attempt to permit the continued presence of swiftlet farms in urban areas (Duckett-Wilkinson, correspondence, undated). This resonates with an earlier study by Wolch *et al* (2000) on attitudes towards animals amongst immigrants in Los Angeles, which noted that Latina immigrants would keep chickens in their backyards so as to retain a connection to rural landscapes of their past.[10]

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9 Duckett-Wilkinson is a former Penang Heritage Trust (PHT) council member and was personally affected by the prolific swiftlet farming industry in George Town. She consequently spent considerable time researching and raising awareness about the potential dangers of swiftlet farming in the urban area, in addition to advising the government on how to best mitigate these issues.

10 Similarly, Gaynor found that working and middle-class residents in the city saw the keeping of productive animals in residential spaces as entirely legitimate, which conflicted with public assertions of negative externalities related to perceived health and nuisance aspects (see also Blecha and Leitner, 2014).

In attempting to naturalise the industry in this way, one swiftlet farming advocate from Klang, southwest of Kuala Lumpur, posed that "if the swiftlet stays, it means as far as the swiftlet is concerned, it is its natural habitat" (in *The Star*, 7 May 2010, np). Indeed, there is some historical evidence demonstrating an inherent 'house seeking behaviour' of swiftlets, as discussed in the previous section. As Duckett-Wilkinson recounted, "I do remember the swiftlets coming up under the roof awnings, against and behind signboards, into old houses, etc." (correspondence, 19 January 2010). This rationale was used by swiftlet farmers to justify the presence of their farms, and to resist both popular and state-led movements to evict them from urban areas. As such, Carol Loh, the (former) President of the Penang Swiftlet Farmers' Association was quoted in a 2010 newspaper article as asking "where the hundreds of swiftlets would go if their *natural* habitat was to be destroyed" (in Kaur, 2010, np, emphasis added). Such comments thus sought to unsettle taken for granted notions of the city as a site of human dominance, and destabilise the assumed spatial divides separating humans from animals.

In an attempt to gain scientific backing for these claims, the bird-nest farming community in Penang (the Association of Swiftlet Nest Industries, ASNI) attempted to utilise research by Lord Cranbrook investigating whether or not 'house swiftlets' are in fact a new sub-species of swiftlets. At the time, the research produced only anecdotal findings, such as the observation that "there are no instances anywhere in Peninsular Malaysia, of white-nest swiftlets colonising caves" (Cranbrook, 2010). However, a recent paper found that house farm birds of Sarawak (Malaysian Borneo) resembled neither of the wild species occurring naturally in the state, and had distinct genetic material (Cranbrook et al., 2013). More research is needed for these findings to be conclusive, but swiftlet farming associations could use this research to legitimise and

indeed ‘naturalise’ urban swiftlet farming in Malaysian cities, and thus alter the legal situation of swiftlet farming in cities where it is currently banned.

Nonetheless, the implications of this research has been a topic of debate, as some stakeholders have argued that the breeders actually manipulate swiftlets to construct their nests in swiftlet farms through forms of ‘sonic attraction’. As Duckett-Wilkinson put it, the ‘house seeking’ tendency of swiftlets has thus “been aggressively stimulated by the use of constantly running CD’s [sic] which attract the birds in large numbers into the artificial caves/swift farms” (correspondence, 19 January 2010).[11] The consequences of this, she notes, has been that “there is now a large (and growing) population of swiftlets behaviourally entrained to seek houses as nesting sites”, and that this behaviour cannot be easily ‘regulated’ (Duckett-Wilkinson, correspondence, 2011). Some respondents thus view the house seeking behaviour of swiftlets as a result of the indiscriminate proliferation of swiftlet farms, conditioning the birds to be reliant upon built structures for their survival. As one commentator put it, “the fact remains that the activities are man-made initiatives that induce the birds to proliferate unnaturally with the intention to reap commercial benefits” (Bhatt, 2010, p.11). This point further underscores the public perception that swiftlet farms are ‘unnatural’, and also that the practice prioritises private over public interests.

Additionally, the location of swiftlet farms in areas where there are no ‘natural’ spaces for habitation (i.e. caves) makes it impossible to relocate to such spaces in the future. To put things in context, Cardosa gave the example of bats that have taken up residence outside of her office in central Kuala Lumpur: “we don’t mind them staying there, and every few days we go out and

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[11] Colloquially known as ‘tweeters’ , such recordings are played in cities throughout Malaysia were banned in George Town at the beginning of 2011.

clean up their droppings, but this is different than actively encouraging them to stay there and collecting their droppings for sale as fertilizer" (ibid). Furthermore, Duckett-Wilkinson, in a letter to the Malaysian Prime Minister Najib Tun Razak, argued that the problem ultimately lies in a problem of scale. As she stated, 400 chicken farms would not be tolerated anywhere in urban areas and neither should swiftlet farms. As such, some stakeholders also questioned the sustainability of the trade, in relation to the possible ecological effects arising from an abnormally dense concentration of swiftlets in a given area. For instance, Cranbrook (2010) has raised concerns about potential competition for food and chronic disease or parasitism amongst farmed populations if the swiftlet population is artificially increased. For this reason Lim and Cranbrook (2014) have recently argued that it is important to maintain wild populations of swiftlets in order to preserve the genetic resources and viable gene pools which are not as robust amongst house-farmed populations.

The implications of urban swiftlet farming for socionatural (animal-human) relations in the city, and the discursive representations of the industry speak to key concerns of landscape political ecology. Not only do they disrupt binaries such as urban/nature or wild/domestic, they also reveal the 'econonatural networks' that are involved in the transformation of urban spaces and biophysical/socio-economic processes (see Bakker and Bridge, 2006; Castree, 2002; Thorburn, 2014).[12] In this way, accelerating land-use change and non-human agency combine to bring about dramatic - and contested - transformation of the urban form, with significant social-ecological implications. The next section will now discuss the agency of swiftlets in more detail,

[12] Caster (2002, p.30) uses this term to refer to the intertwining of socionatural processes that combine to create a particular commodity or mode of production. In this case, it is the commensal nature of swiftlets inhabiting human-made swiftlet farms in urban areas.

with particular attention paid to their impact on urban form and the regulation of the urban environment.

4.2. On the agency of swiftlets and the shaping of urban policy

Objections to swiftlets in George Town were not only made on a normative basis, but also appealed to legal frameworks in place to regulate the location of particular economic activities. Many stakeholders compared swiftlet farming to chicken farming and other forms of livestock rearing in contesting its appropriateness for the city. As one resident lamented, 'it's the same as wanting to operate a chicken farm next to your house or office. You will not get a license from the local authority for the farm' (Henry, 2005, p. 4). This sentiment was echoed by a Penang resident who complained that 'the breeding of poultry, cattle and other animals is strictly regulated and disallowed in town areas, so should it be any different for swiftlets?' (Tan, 2009, p. 22). This comment reflects the widely held view of critics of the Malaysian swiftlet farming industry, including some municipal councillors, that regulations on the farming of animals in the city should be consistent between different animals (PLGCF, 2010: 13-14). Duckett-Wilkinson thus suggested doing away with guidelines for swiftlet farming in urban areas all together, maintaining that 'no one would agree to have guidelines about chicken farming in urban and residential areas and yet they exist for swiftlets' (Duckett-Wilkinson, correspondence, undated).

Despite the widespread comparisons between swiftlet and chicken farming, there are actually important nuances between the two, as discussed in the introduction to this section (4). As Carole Loh suggested: "swiftlet houses are more like hotels and the birds are guests. They can check in any time and leave any time. We don't feed the birds and they are free to roam so it's

unfair to label us ‘farmers’” (Chua, 2010, p.14). Such rhetoric used by swiftlet farming lobbyists also emphasised the agency of swiftlets in justifying their claim to urban space, by arguing that the birds are ‘impossible to move’ (Filmer and Chen, 2011, np). As one operator based in George Town argued, “the birds are here because it is where they live. If they (the state) want to get rid of them, they will have to talk to [the birds] themselves” (ibid). Unlike chickens, Loh argued, “swiftlets are free flying and we cannot just put them into cages and move them” (in *The Star*, 13 October 2010, p. N12). These claims brought attention the fact that the process of relocating the birds is not entirely subject to human control, and positioned swiftlets as active agents in determining their presence in the urban landscape (see also, Notzke, 2013). Moreover, by highlighting the agency of swiftlets in make their nests in the city, swiftlet farmers also made a moral and ethical provocation that swiftlets belong in the urban environment equally as much as humans.

The agency of swiftlets thus presented a significant challenge to efforts by the Penang State Government and George Town City Council to forcibly relocate the farms. Indeed, in an ‘implementation plan’ developed for the Penang State Government to assist their enforcement action in 2011, Duckett-Wilkinson explained that, upon closing a swiftlet farm, the building has to be completely sealed after the birds leave the premise in the morning, which will prevent their re-entry in the evening. As she wrote, “the birds will be highly agitated and will try to return to their farm. Neighbours will be subjected to noise from the birds and the physical sight of the birds flying around at low level in the immediate area” (Duckett-Wilkinson, correspondence, 2010). Furthermore, Duckett-Wilkinson detailed that this process will take a minimum of two months, before all of the birds stop attempting to return and find a new site to nest. Her report

also stressed that the closure of swiftlet farms would have to be undertaken in stages, to allow the birds to 'reshuffle' and migrate over a more widespread area, while also reducing the level of public nuisance. It is for this reason that the State Government allowed three years for the removal of swiftlet farms from George Town, as outlined above.

Much of the discussion thus far has presented the controversy over swiftlet farms as being highly polemic. However, most critics of the swiftlet farming have actually not argued for stopping the industry altogether. Rather, such respondents argued that swiftlet farming activities should be placed 'elsewhere', outside of urban residential areas, or more stringently regulated. As Chow Kon Yeow, a senior official in the Penang State Government put it, 'no one is against the industry, but it should be located in the right place' (in Chua, 2010, p. 14). Indeed, many stakeholders felt that swiftlet farms should be moved to light industrial or agricultural areas, where they would be less of a nuisance and hazard to humans. On the other hand, as Duckett-Wilkinson has stated in regards to George Town's inner city area, 'I think 10 houses can be dealt with provided they do not effect nearby residents but 400 is a different issue, surely the industry has to be viewed in a different light?' (in Chua, 2010, p. 12). A long-term solution is thus required, which would prioritise the protection of public health, animal welfare, and ecological sustainability, while also granting swiftlet farmers some respite.

Given that the issue of where swiftlet farms should be located is such a complicated (and highly politicised) issue, and cannot be simply delimited to rural areas, some stakeholders have recommended that only swiftlet farmers who can show a letter of support from residents in the vicinity of their premise be given a license to operate in urban areas. All other swiftlet farms would only be allowed in designated areas for swiftlet farming (similar to free trade zones,

industrial areas or designated pig farm areas in Malaysia). Such a solution could be used as a compromise to satisfy swiftlet farmers reluctant to relocate from urban areas for various reasons. Similarly, Craig Thorburn (2015) has reported that several local and regional governments in Indonesia have begun to develop strict regulations on swiftlet farms in urban areas, which serves the dual purpose of limiting negative externalities and developing an important source of income for the government. Given that EBNs in 2011 constituted one of Malaysia's top natural resource exports, such a move would be well justified.

Proper regulation of the industry could thus lead to a 'win-win' situation in which humans and swiftlet farms could coexist in cities like George Town. However, the regulation and enforcement of guidelines for swiftlet farming in the city, and all of Peninsular Malaysia, has been highly inconsistent throughout the industry's history, resulting in this coexistence never being realised. Moreover, as mentioned in the introduction (Section 1), the economic benefits of swiftlet farming - and state promotion of the industry - provided a strong incentive to the State Government to allow successful farms to continue operating, despite their illegal status in George Town. This point is similar to Hovorka's (2008) finding that some state officials in Malawi admitted that the economic benefits of having urban chicken farms in the urban area encouraged them to 'leave [the chickens] alone', despite some discomfort over their proximity to the city's main water source. It is thus clear that living with (productive) animals in the city necessarily requires weighing out the social and economic benefits, along with the various socio-ecological hazards posed by such co-habitance, and negotiating acceptable compromises on both sides.

5. Conclusion:

This paper has offered an analysis of the intense controversies surrounding the cultivation of edible birds' nest, or 'swiftlet farming' in Malaysian cities, focusing on George Town, Penang. The discomfort arising from swiftlets in the city has stemmed from the actions undertaken by swiftlet farmers to aggressively attract swiftlets to cities, which has posed several socio-environmental issues in the urban area. In addition to transforming the physical form and function of the city, the industry has also altered the nesting behaviours of swiftlets, which poses important implications for the use of urban space, and the sustainability of urban swiftlet farming as a whole. What has emerged is a moral landscape shaped as much by the ideological production of the urban environment as by swiftlet ecology and their perceived 'natural' habitats.

The paper has also considered the implications of 'farming' such animals in urban residential areas, and the potential solutions that have been proposed to address these issues. The case of swiftlet farming is a unique form of urban agriculture which more resembles aviculture, than farming or ranching. The industry thus calls into question the use of the term farming as a stable categorisation for the keeping of productive animals in the city, and the spatial regulation of such practices. Swiftlets have therefore been construed as 'liminal' animals (Yeo and Neo, 2010); straddling the boundary between 'domestic' and 'wild', 'natural' and 'unnatural', and consequently destabilising these conceptual divides (see also, Collard, 2012; Haraway, 2008; Notzke, 2013). The analysis offered here thus provides new insights into the constantly evolving relationship between humans and animals in urban contexts, particularly in rapidly urbanising Southeast Asian cities.

The LPE approach is thus a useful framework for analysing these controversies given the entanglement of ecological, political and cultural framings involved in shaping public opinion on urban swiftlet farming (see Neumann, 2011; Walker and Fortmann, 2003). For instance, George Town's UNESCO status was a central factor highlighted by different stakeholders in positioning urban swiftlet farming as an undesirable and untenable feature of the urban landscape. In this way, the controversies over swiftlet farming also suggest a perceived incompatibility between the domestication of animals for profit and alternative functions of the city, particularly in aspiring global or 'world' cities.[13] Moreover, the way in which these rhetorics have been contested by swiftlet farmers through various discursive and rhetorical means raises the question of how urban space should be assembled, and in whose interest.

Finally, the case of swiftlet farming in George Town adds to way that animal geographers and urban political ecologists conceptualise the role of animals in shaping urban form and dynamics, through their role in influencing urban policy decisions (see also, Dempsey, 2010; Hovorka, 2008; Peltola et al., 2013). For instance, the agency of the swiftlets in 'resisting' human decisions to remove them from the urban landscape also attests to the role of animals in influencing urban policy, making it a more-than-human affair. Swiftlets were not merely passive agents that were invoked by various stakeholders such as NGOs, government officials or Swiftlet farmers, but rather played a key role in influencing the configuration of the urban landscape and local state of affairs. Despite the nuisances and potential hazards that swiftlets and other urban animals can present, the case suggests that, in order to create more inclusive urban commons, we must be prepared to mitigate and accept such externalities. The case thus adds to emerging

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[13] See Cho (2010) for further discussion of this concept.

literature which recognises that the development of urban policy must take into account the agency of non-humans, and cannot be fully controlled by human interests.

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